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SYNOPSIS OF NORTH-AMERICAN INVERTEBRATES.

VII. THE CYCLOMETOPOUS OR CANCROID CRABS OF NORTH AMERICA.

MARY J. RATHBUN.

IN the Cyclometopa the carapace is usually broader than long, regularly arched in front, and not rostrate; the epistome is short and transverse; the outer maxillipeds have the fifth joint articulated at the inner front angle of the fourth; there are nine pairs of branchiæ, their efferent channels opening at the sides of the endostome or palate; and the genital organs of the male are inserted at the bases of the last pair of trunk legs.

This tribe contains many well-known crabs, including all the large edible species of the United States—the common “blue crab,” or *Callinectes*, of our eastern coast, the stone crab (*Menippe*) of the Southern States, and the large *Cancer magister*, or common crab, of the Pacific coast.

The Cyclometopa, as represented in North America, may conveniently be subdivided into three families: first the Cancridæ, containing the genus *Cancer* with eleven species, some of which attain a large size and which frequent rocky and sandy bottoms, and the genera *Telmessus* and *Erimacrus*, hairy crabs inhabiting Bering Sea and the North Pacific and furnishing food for fur seals.

The remainder of the crabs of cancroid shape, that is, transversely oval or hexagonal and without projecting spines or natatory feet, are included in the family Pilumnidæ, many of which are small species inhabiting muddy places or living under stones or in crevices of rocks or sponges.

The family Portunidæ, or the swimming crabs, have, with one exception, the last pair of legs developed into a swimming

paddle. They include the widespread pelagic *Portunus sayi*, the "lady crab," or "calico crab" (*Ovalipes ocellatus*), and the edible Callinectes.

In the key which follows, the same terms are employed to indicate geographical distribution as in Professor Kingsley's keys to the Macrura, with two additions. Although the species of the southern half of Florida are excluded from the key as belonging properly to the West Indian fauna, those of the remainder of the Gulf coast are included. It has also seemed advisable to indicate by the letters *CH* those species whose northern limit is Cape Hatteras. The characters used are as follows:

- A* Alaska south.
- P* Puget Sound to San Francisco.
- D* Monterey to San Diego.
- N* Atlantic coast south to Cape Cod.
- M* Cape Cod to North Carolina.
- S* South Carolina to Florida.
- G* Gulf of Mexico.
- CH* Cape Hatteras, northern limit.

The bathymetrical limit is 100 fathoms.

KEY TO THE FAMILIES OF THE TRIBE CYCLOMETOPA.

- A*. Antennulæ folded longitudinally. Outer maxillipeds long, overlapping the epistome CANCRIDÆ Latreille, Alcock
- A*. Antennulæ folded transversely or obliquely transversely. Outer maxillipeds usually not overlapping the epistome.
- B*. Last pair of legs not modified for swimming
PILUMNIDÆ Leach = XANTHIDÆ Alcock
- B'*. Last pair of legs usually modified for swimming, with the last two joints compressed, very broad and paddle-like. Carapace widest at the last antero-lateral marginal spine. Usually from 5 to 9 antero-lateral spines or teeth . . . PORTUNIDÆ Leach, Miers

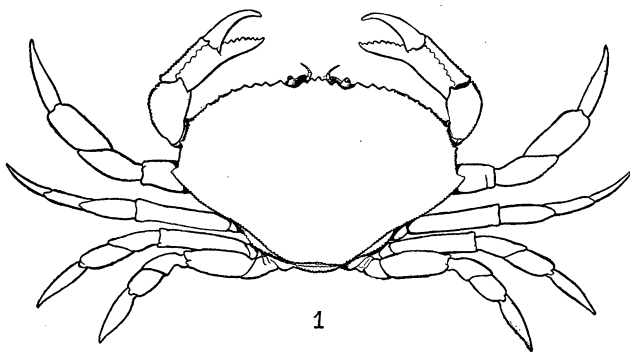
KEY TO THE GENERA OF THE FAMILY CANCRIDÆ.

- A*. Buccal cavity completely closed by the outer maxillipeds . . Cancer
- A'*. Buccal cavity not completely closed by the outer maxillipeds.
- B*. Carapace broader than long, pentagonal Telmessus
- B'*. Carapace longer than broad, suboval Erimacrus

THE SPECIES OF CANCRIDÆ.

Genus *Cancer* Linnaeus.*Key to Species.*

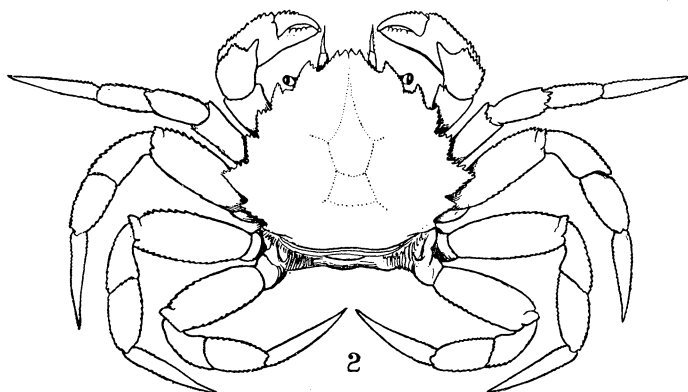
- A.* Ambulatory legs very broad and flat, especially those of the last pair
C. magister Dana APD
- A'.* Ambulatory legs of moderate width.
- B.* Fronto-orbital width small, about one-fifth width of carapace.
 Front strongly advanced beyond outer orbital angles
C. productus Randall APD
- B'.* Fronto-orbital width more than one-fifth width of carapace. Front
 not greatly advanced beyond outer orbital angles.

FIG. 1. — *Cancer magister*.

- C.* Color on the fingers extending from the tip not more than half the length of the fingers.
- D.* Carpus of cheliped with two spines at inner angle, one below the other.
- E.* Antero-lateral teeth shallow, projecting little from the carapace. Carapace very slightly areolated
C. gracilis Dana APD
- E'.* Antero-lateral teeth strong, projecting well out from the carapace.
- F.* Fronto-orbital width one-third the width of the carapace. Carapace strongly areolated
C. gibbosulus (de Haan) APD
- F'.* Fronto-orbital width nearly half the width of the carapace. Carapace slightly areolated
C. jordani Rathbun, sp. nov.,¹ D

¹ Type, U. S. Nat. Mus. No. 22868, Monterey Bay, Harold Heath, collector. The new species noticed in this paper will be described in full in the *Proceedings of the United States National Museum*.

- D'*. Carpus of chelipeds with one spine at inner angle.
E. Antero-lateral teeth with dentate or spinulose margins.
F. Crests on hand feeble, granulate
C. anthonyi Rathbun *D*
F'. Crests on hand strong, the upper ones spinulose
C. borealis Stimpson *NM*
E'. Antero-lateral teeth with margins simply granulate
C. irroratus Say *NMS*
C'. Color on the fingers extending from the tip more than half the length of the fingers.
D. Fronto-orbital width one-third the width of the carapace
C. antennarius Stimpson *APD*
D'. Fronto-orbital width nearly one-half the width of the carapace. Carapace strongly areolated.

FIG. 2. — *Telmessus cheiragonus*.

- E*. Front truncate. Movable finger almost entirely dark-colored . . . *C. oregonensis* (Miers) *APD*
E'. Front not truncate. Movable finger not more than two-thirds dark-colored . . . *C. amphiatius* Rathbun *D*
Genus *Telmessus* White *T. cheiragonus* (Tilesius) *AP*
Genus *Erimacrus* Benedict *E. isenbeckii* (Brandt) *A*

KEY TO THE GENERA OF THE FAMILY PILUMNIDÆ.

- A*. The ridges that define the efferent branchial channels, if present, are low, and are confined to the posterior part of the endostome, never reaching to the anterior boundary of the buccal cavern.
B. Fronto-orbital border less than half the greatest width of the carapace.

- C.* Antero-lateral margin continued to the angle of the buccal cavity. Carapace eroded Glyptoxanthus
- C'.* Antero-lateral margin ending at the orbit.
- D.* A deep notch in the anterior border of the merus of the external maxillipeds. Carapace nodose *Daira*
- D'.* No deep notch in the anterior border of the merus of the external maxillipeds. Carapace not nodose
Cycloxanthops
- B'.* Fronto-orbital border half or more than half the greatest width of the carapace.
- C.* Chelipeds with a circular cavity on the anterior margin between the carpus and manus Carpoporus
- C'.* Chelipeds without a circular cavity on the anterior margin.
- D.* Carpal joints of ambulatory legs armed above with a horned or lunate crest Heteractæa
- D'.* Carpal joints of ambulatory legs not armed with a horned crest.
- E.* Carapace transversely oval.
- F.* Ambulatory legs spiny or granular on the upper border Xanthias
- F'.* Ambulatory legs not spiny nor granular on the upper border.
- G.* Four or more well-marked antero-lateral teeth, excluding the orbital
Leptodius
- G'.* Four antero-lateral teeth (besides the orbital), the first of which is low and more or less fused with the orbital
Eurypanopeus
- E'.* Carapace more or less hexagonal or subquadrate.
- F.* Carpal and propodal joints of ambulatory legs more or less cristate Lophopanopeus
- F'.* Carpal and propodal joints of ambulatory legs not cristate.
- G.* Ambulatory legs spinulose. Micropanope
- G'.* Ambulatory legs not spinulose.
- H.* Three antero-lateral teeth besides the orbital, the second normal tooth, or that next the orbital, being obsolete
Glyptoplax
- H'.* Four antero-lateral teeth besides the orbital, the second normal tooth, or that next the orbital, being sometimes partially united with the orbital, but never obsolete.

- J.* Terminal segment of abdomen of male oblong. Carapace subquadrate, narrow (length about three-fourths width), approaching the Catometopa. Prominent transverse dorsal ridges

Rhithropanopeus

- J'.* Terminal segment of abdomen of male subtriangular. Carapace when subquadrate, wider than the preceding.

K. Front arcuate. Carapace hexagonal. Neopanope

K'. Front with truncate or sinuous lobes.

L. Front very narrow and advanced. Postero-lateral margins strongly converging. Carapace hexagonal

Hexapanopeus

L'. Front of moderate width. Postero-lateral margins not strongly converging. Carapace subquadrate

Eupanopeus

A'. The ridges that define the efferent branchial channels extend to the anterior boundary of the buccal cavern and are often very strong.

B. Fronto-orbital border just about half or less than half the greatest breadth of the carapace, which is broad and transversely oval.

C. Antero-lateral margin much shorter than the postero-lateral. Front with two simple lobes Eurytium

C'. Antero-lateral and postero-lateral margins subequal. Front with two lobulate lobes Menippe

B'. Fronto-orbital border much more than half the greatest breadth of the carapace.

C. Carapace nodose Lobopilumnus

C'. Carapace not nodose, but often granulate or spinous, and usually hairy Pilumnus

THE SPECIES OF PILUMNIDÆ.

Genus Glyptoxanthus A. Milne Edwards . . . *G. erosus* (Stimpson) *G.*

Genus *Daira* de Haan *D. americana* Stimpson¹ *D.*

Genus Cycloxanthops Rathbun . . . *C. novemdentatus* (Lockington)² *D*
= *C. californiensis* Rathbun

Genus *Carpoporus* Stimpson . . . *C. papulosus* Stimpson $M(CH)G$

Genus *Heteractæa* Lockington *H. lunata* (Milne Edwards and Lucas) *D*

Genus *Xanthias* Rathbun *X. taylori* (Stimpson) D

Genus *Leptodius* A. Milne Edwards *L. agassizii* A. Milne Edwards
M(CH)G

Genus *Eurypanopeus* A. Milne Edwards. . *E. depressus* (Smith) MSG

Genus *Lophopanopeus* Rathbun.

Key to Species.

A. Upper margin of meral joints of ambulatory legs not spinulose.

B. Hands smooth, without lobe or tooth on upper margin.

L. bellus (Stimpson) *APD*

B'. Hands with one or more lobes or teeth on upper margin.

C. Carpus of cheliped smooth or nearly so.

D. Color of pollex running far back on hand

L. frontalis Rathbun *D*

D'. Color of pollex not running back on hand

L. heathii Rathbun, sp. nov.,³ D

C'. Carpus of cheliped very rough.

D. Carpal joints of ambulatory legs strongly bilobed.

E. Carpus of cheliped covered with reticulating ridges enclosing pits of irregular shape

L. leucomanus (Lockington) D

E'. Carpus of chelipeds covered with tubercles

L. diegensis Rathbun, sp. nov.,⁴ D

D'. Carpal joints of ambulatory legs slightly bilobed

L. lockingtoni Rathbun, sp. nov.,⁵ D

¹ California, on the authority of A. Milne Edwards.

² Mr. S. J. Holmes has compared specimens (not types) determined by Lockington as *Xantho novemdentatus*, with *C. californiensis*, and pronounces them the same. If the species are identical, Lockington's measurements of his type must be erroneous.

³ Type, U. S. Nat. Mus. No. 22870, Monterey Bay, Harold Heath, collector.

⁴ Type, U. S. Nat. Mus. No. 4281, San Diego, 10 fathoms, H. Hemphill, collector.

⁵ Type, U. S. Nat. Mus. No. 19973, San Diego Bay, Steamer *Albatross*, collector. *Xanthodes latimanus* Lockington is probably a *Lophopanopeus*, but is not determinable with certainty.

A'. Upper margin of meral joints of ambulatory legs spinulose

L. distinctus Rathbun *G*

Genus Micropanope Stimpson.

Key to Species.

A. Second normal tooth of the antero-lateral margin absent

M. sculptipes Stimpson *SG*

A'. Second normal tooth of the antero-lateral margin present

M. xanthiformis (A. Milne Edwards) *M(CH)*

Genus Glyptoplax Smith.

Key to Species.

A. Last tooth of lateral margin small but well marked. Median lobe of the upper orbital margin strongly arcuate

G. smithii A. Milne Edwards *M(CH)G*

A'. Last tooth of lateral margin rudimentary. Median lobe of the upper orbital margin subtruncate. . . *G. pusilla* (A. Milne Edwards) *G*

Genus Rhithropanopeus Rathbun *R. harrisii* (Gould) *NMSG*

Genus Neopanope A. Milne Edwards.

Key to Species.

A. Dactylus of larger hand with a large basal tooth

N. packardii (Kingsley) *G*

A'. Dactylus of larger hand without a large basal tooth.

B. Fingers white or light horn-color. Antero-lateral teeth sharp and much produced *N. texana* (Stimpson) *SG*

B'. Fingers black or dark-colored in the males. Antero-lateral teeth blunter and less produced . . . *N. texana sayi* (Smith) *MS*

Genus Hexapanopeus Rathbun

H. angustifrons (Benedict and Rathbun) *MSG*

Genus Eupanopeus Rathbun.

Key to Species.

A. Carpus of cheliped with a groove parallel with its distal margin. Color of immovable finger not extending beyond the line of color on the movable finger *E. occidentalis* (Saussure) *S*

A'. Carpus of cheliped without groove. Color of immovable finger extending beyond the line of color on the movable finger

E. herbstii (Milne Edwards) *MSG*

Genus Eurytium Stimpson *E. limosum* (Say) *MS*

Genus Menippe de Haan.

Key to Species.

A. Surface of carapace almost smooth. Antero-lateral teeth or lobes shallow or little projecting . . . *M. mercenaria* (Say) *M(CH)SG*

A'. Surface of carapace anteriorly nodose. Antero-lateral teeth strong, projecting well out from the carapace . . . *M. nodifrons* Stimpson *S*

Genus *Lobopilumnus* A. Milne Edwards . . . *L. agassizii* Stimpson *G*

Genus *Pilumnus* Leach.

Key to Species.

A. Carapace concealed by a short, thick pubescence, which, when removed, discloses tubercles on the gastric and hepatic regions

P. pannosus Rathbun *G*

A'. Carapace, when covered by a short, thick pubescence, not having the gastric region tuberculate.

B. Superior orbital border with one or few long spines.

C. Superhepatic region unarmed

P. spinohirsutus (Lockington) *D*

C'. Superhepatic region armed with spines or spinules

P. sayi Rathbun *M(CH)SG*

B'. Superior orbital border either entire or armed with denticles or spinules.

C. Outer surface of smaller hand only partially covered with tubercles or spines *P. lacteus* Stimpson *G*

C'. Outer surface of smaller hand entirely covered with tubercles or spines *P. floridanus* Stimpson *G*

KEY TO THE GENERA OF THE FAMILY PORTUNIDÆ.

A. Last pair of legs broad, modified into swimming paddles.

B. Carapace decidedly transverse; antero-lateral margins cut into nine teeth.

C. Movable portion of the antenna excluded from the orbital cavity by a prolongation of the basal joint of the antenna

Charybdella

C'. Movable portion of the antenna not excluded from the orbit.

D. No longitudinal ridge on the palate *Arenæus*

D'. A longitudinal ridge on the palate.

E. Abdomen of male \perp -shaped *Callinectes*

E'. Abdomen of male triangular *Portunus*

B'. Carapace not very broad; antero-lateral margins cut into five teeth.

C. Last tooth of antero-lateral margin developed into a spine, longer than the other teeth or spines *Bathynectes*

C'. All antero-lateral teeth similar *Ovalipes*

A'. Last pair of legs narrow, with dactylus lanceolate *Carcinides*

THE SPECIES OF PORTUNIDÆ.

Genus *Charybdella* Rathbun *C. rubra* (Lamarck) *S*

Genus *Arenæus* Dana *A. cribrarius* (Lamarck) *MSG*

Genus *Callinectes* Stimpson.

Key to Species.

- A. Front with four intraorbital teeth.
 - B. Median pair of frontal teeth without an accessory tooth
C. sapidus Rathbun *NMSG*
 - B'. Median pair of frontal teeth, each with an accessory tooth on its inner margin *C. sapidus acutidens* Rathbun *SG*
- A'. Front with six intraorbital teeth.
 - B. Intramedial region broad, its anterior width about three times its length. Posterior margin of antero-lateral teeth longer than the anterior *C. ornatus* Ordway *SG*
 - B'. Intramedial region narrow, its anterior width about twice its length. Second to sixth antero-lateral teeth equilateral
C. danae Smith *SG*

Genus *Portunus* Fabricius.

Key to Species.

- A. Carapace wide; antero-lateral margin the arc of a circle with long radius, whose center is near the posterior margin of the carapace
 Subgenus *Portunus* = *Neptunus* de Haan

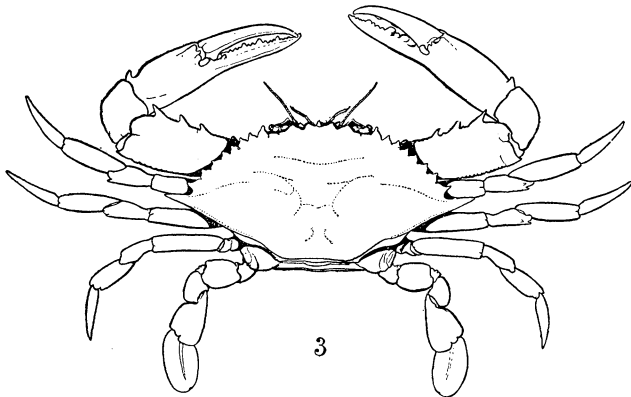


FIG. 3. — *Callinectes sapidus*.

- B. First eight lateral spines or teeth subequal.
 - C. Front with six intraorbital teeth *P. sayi* (Gibbes) *NMSG*
 - C'. Front with eight intraorbital teeth
P. gibbesii (Stimpson) *MSG*
- B'. Second, fourth, and sixth lateral teeth or spines smaller than the others *P. xantusii* (Stimpson) *PD*
- A'. Carapace narrow; antero-lateral margin the arc of a circle with short radius, whose center is near the center of the cardiac region
 Subgenus *Achelous* de Haan (including *Hellenus* and *Amphitrite* de Haan).

B. Carapace with rounding posterior corners.

C. Posterior of the lateral spines of the carapace exceeding the other spines or teeth but little if at all.

D. Three spines on manus *P. anceps* (Saussure) *M(CH)*

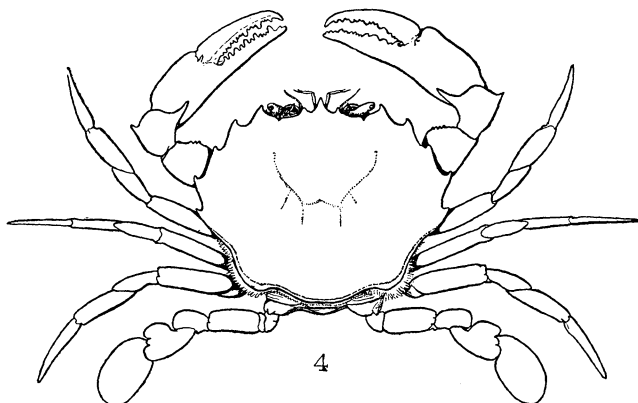


FIG. 4. — *Ovalipes ocellatus*.

D'. Two spines on manus.

E. Superior outer surface of manus smooth, iridescent
P. ordwayi (Stimpson) *G*

E'. Superior outer surface of manus with a longitudinal, tuberculated ridge.

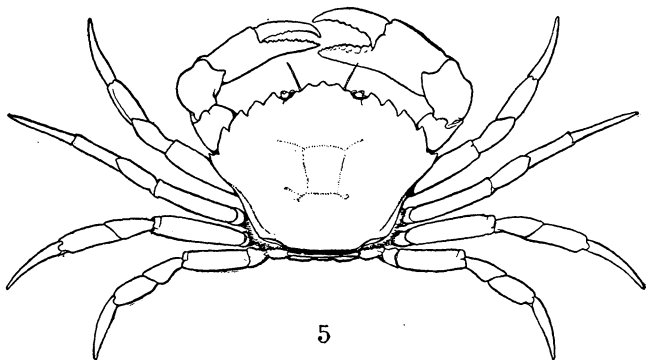


FIG. 5. — *Carcinides manas*.

F. Front with eight intraorbital teeth

P. spinimanus (Latreille) *MSG*

F'. Front with six intraorbital teeth

P. depressifrons (Stimpson) *S*

C'. Posterior of the lateral spines of the carapace much longer than the other lateral spines or teeth

P. sebæ (Milne Edwards) *M(CH)*

B'. Carapace with sharp posterior angles

P. spinicarpus (Stimpson) *M(CH)G*

Genus Bathynectes Stimpson *B. superba* (Costa) *M*

Genus Ovalipes Rathbun *O. ocellatus* (Herbst) *NMSG*

Genus Carcinides Rathbun *C. mænas* (Linnæus) *M*

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